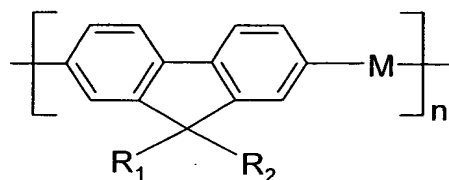


Claims:

1. Photoluminescent marker compound comprising fluorene copolymers, said fluorene copolymers being colorless or nearly colorless upon exposure to ambient light and being photoluminescent between about 380 and 800 nm upon exposure to ultra-violet radiation or laser light, said fluorene copolymers having a general formula as follows:

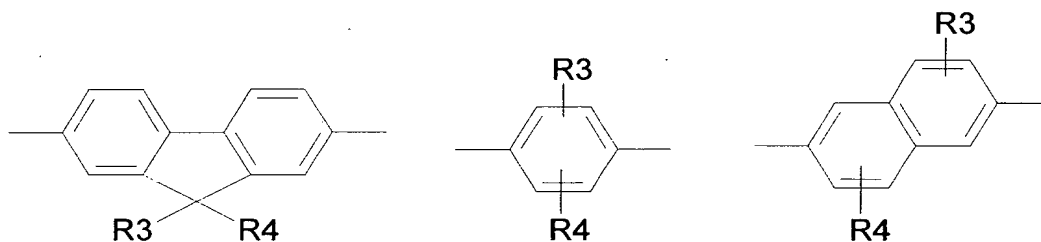


Formula 1

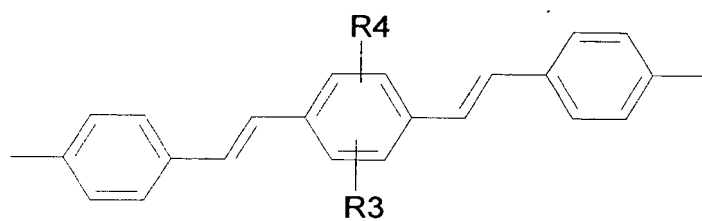
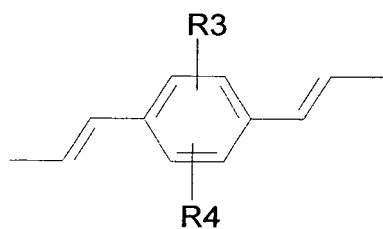
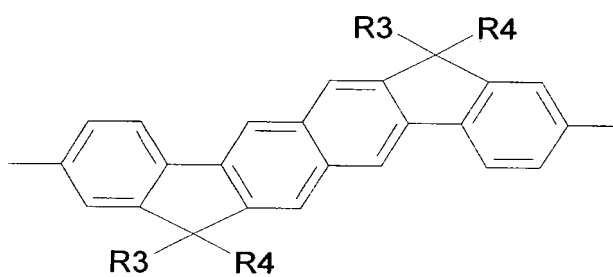
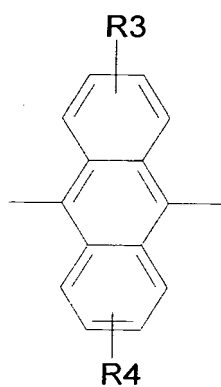
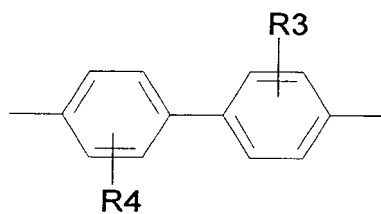
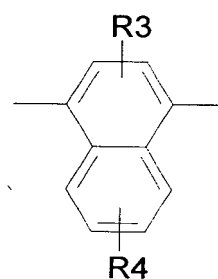
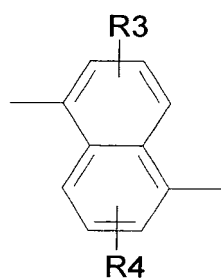
wherein:

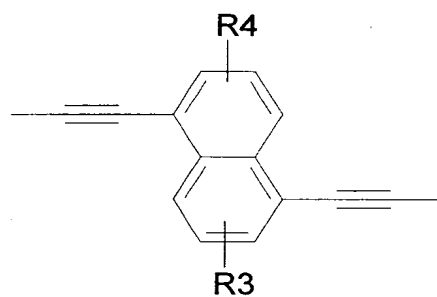
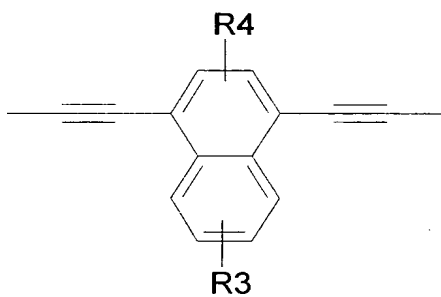
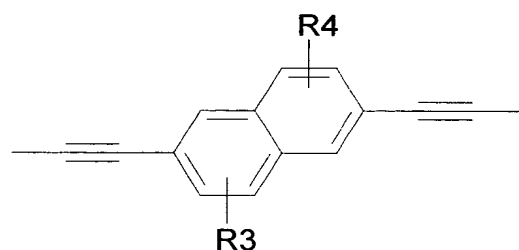
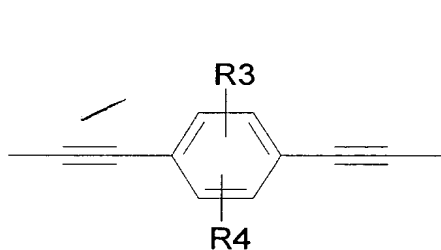
- R_1 and R_2 are $C_1 - C_{24}$ linear or branched alkyl chain,
- n is the number of repeating unit.

M is a co-monomer unit having the following structures:

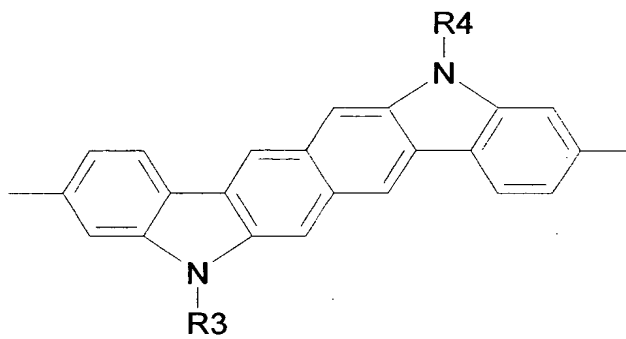
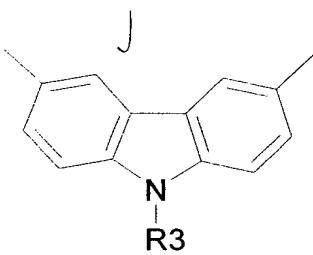
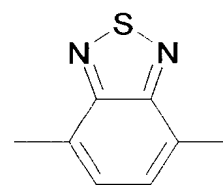
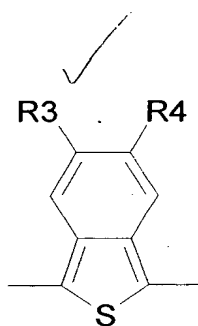
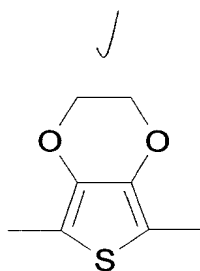
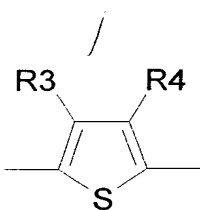


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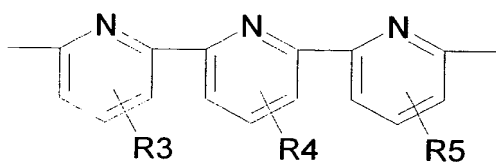
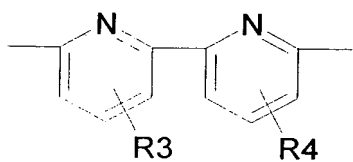
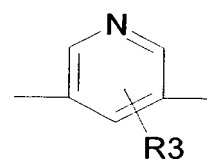
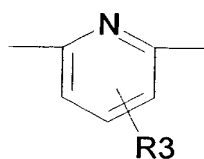
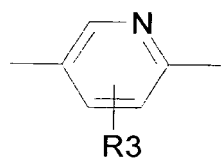
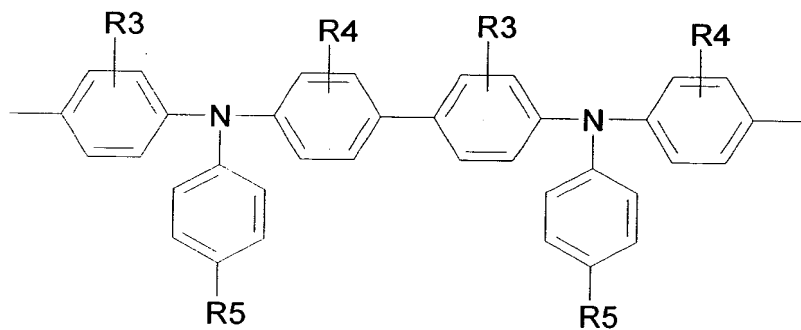
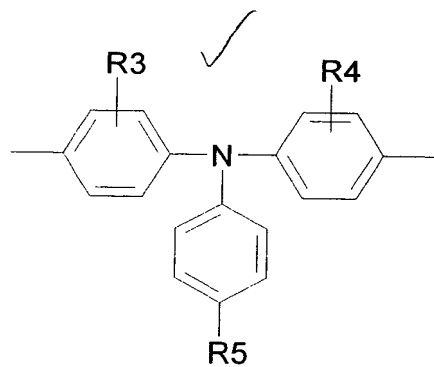




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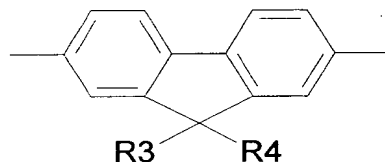
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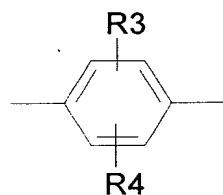
wherein:

R₃, R₄ and R₅ are hydrogen, C₁ – C₁₂ linear or branched alkyl, alkylene, alkyloxy, hydroxy alkyl, amino alkyl, cyanato alkyl, mercaptoalkyl, or poly(oxyalkylene)ether.

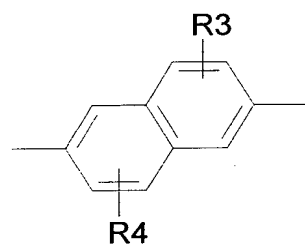
2. The photoluminescent marker of claim 1 wherein M is



3. The photoluminescent marker of claim 1 wherein M is



4. The photoluminescent marker of claim 1 wherein M is



5. The photoluminescent marker of claim 1 wherein said marker is soluble in liquid organic products for tagging bulk liquid organic products.

6. The photoluminescent marker of claim 5 wherein said liquid organic product is a combustible fuel.

7. The photoluminescent marker of claim 6 wherein said combustible fuel is gasoline.

8. The photoluminescent marker of claim 5 wherein said marker is essentially insoluble in aqueous media so as to prevent removal by aqueous solvent extraction.

9. Method of tagging bulk liquid organic products comprising the steps of:
(a) dissolving in a given amount of said bulk liquid organic product a known amount of at least one fluorene copolymer as defined in claim 1 so as to achieve known concentrations of fluorene copolymers in said bulk liquid organic product;
(b) recording the identity of said at least one fluorene copolymers and their corresponding known concentrations for eventual testing to insure that the bulk liquid organic product remains unadulterated.

10. Method of identifying the contents of a bulk liquid organic product tagged with a marker comprising at least one fluorene copolymer as defined in claim 1, wherein said fluorene copolymer is soluble in said liquid organic product, said method comprising the steps of testing the bulk liquid organic product by:

- 436/5b
- (a) subjecting a portion of said bulk liquid organic product to ultraviolet radiation or laser light at wavelengths between about 200 and 500 nm;
 - (b) collecting emitted spectrum of the portion of liquid of step (a) with a photometer;
 - (c) comparing the spectrum to a library of known spectra of tagging markers so as to obtain a most probable match thereby establishing the identity of said marker;
 - (d) comparing the marker to a library of bulk liquid organic product markers linked to specific bulk liquid organic products thereby establishing the identity of said the bulk organic liquid being tested.

11. Method of tagging solid products comprising the steps of:
(a) mixing a known amount of at least one fluorene copolymer as defined in claim 1 with a solid so as to achieve known concentrations of fluorene copolymers in said solid;
(b) recording the identity of said at least one fluorene copolymers and their corresponding known concentrations for eventual testing to insure that the said solid.

12. The method of claim 11 wherein the solid being tagged is a bulk material and the mixing step (a) is effected by solid state blending of a solid copolymer of claim 1 and the solid being tagged.

13. The method of claim 11 wherein the solid being tagged is a polymeric material and the mixing step (a) is effected by melt mixing of a melt of a copolymer of claim 1 and the polymer melt which will yield the polymeric solid upon eventual cooling.

14. The method of claim 11 wherein the solid being tagged is a polymeric material and the mixing step (a) is effected by melt mixing by dissolving a copolymer of claim 1 in a suitable solvent and introducing said dissolved copolymer in the polymer melt which will yield the polymeric solid upon eventual cooling.

15. Method of tagging solid products comprising the steps of:

- (a) dissolving a known amount of at least one fluorene copolymer as defined in claim 1 in a suitable solvent so as to obtain a tagged solvent;
- (b) applying said tagged solvent to said solid product so as to tag said solid product;
- (c) recording the identity of said at least one fluorene copolymers and their corresponding known concentrations for eventual testing to insure that the bulk liquid organic product remains unadulterated.

16. Method of identifying the contents of a solid product tagged with a marker comprising at least one fluorene copolymer as defined in claim 1, said method comprising the steps of testing the bulk liquid organic product by:

- (a) subjecting a portion of said tagged solid to ultraviolet radiation or laser light at wavelengths between about 200 and 500 nm;
- (b) collecting emitted spectrum of the portion of liquid of step (a) with a photometer;
- (c) comparing the spectrum to a library of known spectra of tagging markers so as to obtain a most probable match thereby establishing the identity of said marker;

(d) comparing the marker to a library of bulk liquid organic product markers linked to specific solids thereby establishing the identity or origin of said solid product being tested.

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